

WE CLAIM:

1. A method of creating a predecessor logical disk that is a snapshot of a successor logical disk, wherein the successor logical disk is defined by user data stored in a plurality of uniquely identifiable PSEGS and by metadata including an L2MAP having a plurality of LMAP pointers, one or more LMAPs including a plurality of RSD pointers, and one or more RDSs having a plurality of PSEG pointers, comprising the steps of:

10 creating a predecessor PLDMC;
creating an LMAP for the predecessor logical disk;
populating the LMAP for the predecessor logical disk with RSD pointers from the successor logical disk;
creating an L2MAP for the predecessor logical disk;
15 populating the L2MAP for the predecessor logical disk with the LMAP pointers from the predecessor logical disk;
setting share bits in the LMAPs for the predecessor logical disk and the successor logical disk to indicate that the data is being shared; and
20 setting share bits in the successor PLDMC to indicate that the data is being shared.

2. A method according to claim 1, wherein the step of populating the LMAP for the predecessor logical disk with RSD pointers from the successor logical disk comprises copying RSD pointers.

3. A method according to claim 1, wherein I/O operations to the successor logical disk are quiesced for a predetermined period of time.

4. A method according to claim 3, wherein the predetermined period of time corresponds to the time required to construct the predecessor logical disk.

5. A method according to claim 1, further comprising the steps of:
receiving a write operation directed to memory located in an identified segment(s) of the successor logical disk;
in response to the write operation, copying the identified segment(s) to the predecessor logical disk; and
10 executing the write operation in the successor logical disk.

6. A method according to claim 5, further comprising the step of:
clearing share bits in the LMAPs for the predecessor logical disk and the successor logical disk to indicate that the identified segments are no longer being shared; and
clearing share bits in the successor PLDMC to indicate that identified segments are no longer being shared.

7. A computer-based information storage system, comprising:
a pool of physical storage space divided into a plurality of physically addressable memory locations;
a logical disk structure for mapping virtual storage addresses within the logical disk to physically addressable memory locations, the logical disk structure including a plurality of logically addressable RStores and a plurality of logically addressable LMAPs, wherein the LMAPs includes a first memory location for indicating whether a memory

segment is shared with a successor logical disk and a second memory location for indicating whether a memory segment is shared with a predecessor logical disk.